CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 95-191

SITE CLEANUP REQUIREMENTS FOR:

CALIFORNIA AND HAWAIIAN (C&H) SUGAR COMPANY
C&H SUGAR WASTE MANAGEMENT UNIT
CROCKETT, CONTRA COSTA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. California and Hawaiian (C&H) Sugar Company (hereinafter called the discharger) owns and operates the C&H cane sugar refinery waste management unit (WMU, hereinafter called the facility). Since operation began in 1971, the facility has been operated solely by the discharger, and has received approximately 125,000 tons (dry weight), or approximately 200,000 cubic yards, of combined process sludge from the C&H cane sugar refinery and wastewater sludge from the Crockett/Valona Sanitary District Sewage Treatment Plant.

PURPOSE OF ORDER

2. C&H has discontinued operation of the facility and proposes its closure. This order establishes a set of requirements for closure of the facility. Closure activities will include the excavation and removal of sludge to the extent necessary to ensure that the site no longer has the potential to degrade water quality. The closure will proceed according to a specified time schedule.

SITE DESCRIPTION

3. The facility occupies 5.68 acres, out of a larger 1,300 acre parcel, in the northwestern side of the county, Township 2 North, Range 3 West, Section 8, Benicia 7.5 minute quadrangle, approximately 1.5 miles south of Carquinez Strait (Attachment 1). The facility is located on relatively steep topography at the head of a small canyon on Franklin Ridge. The facility is currently divided into two portions as follows:

   a. The modified-area fill portion of the facility is a 4.24 acre cell excavated approximately 12 feet into siltstone bedrock. This portion has a diameter of approximately 500 feet. Sludge has been off-loaded and spread across an unlined waste drying area during the rainy season in order to reduce moisture content through the evaporation process. Throughout the dry months, the sludge was deposited in piles within the perimeter of the WMU. Toward the end of the dry season, the sludge was moved from the off-loading area to the

are putrescible and subject to anaerobic decomposition processes.

14. A modified Waste Extraction Test (WET) to characterize soluble pollutants in the primary sludge was performed in February, 1994.

    a. Leachable extract from the WET showed a pH of 11, which is in the caustically alkaline range of the pH scale.

    b. High biochemical oxygen demand (BOD) values (260-300 mg/l) were also measured in the primary sludge extract.

    c. Total dissolved solids (TDS) were present in the primary sludge extract at concentrations of 670-690 mg/l. The most prevalent salt in the primary sludge is calcium phosphate found in bone char dust and also formed by flocculating lime and phosphoric acid in the refinery process.

GEOLOGIC SETTING

15. The C&H WMU is nestled within a series of hills in the Diablo Range of the Coast Range Geomorphic Province. The Diablo Range is a northwest-trending range of mountains bounded on the southwest by the faults of the San Andreas fault system, and on the northeast by the structurally downwarped San Joaquin Valley. In general, the Diablo Range consists of a central core of mesozoic Franciscan rocks bounded along a structural discontinuity with Mesozoic Great Valley sequence rocks and overlying Cenozoic strata.

16. The ROWD states that the Franklin thrust fault, which strikes northwest-southeast, occurs approximately 500 feet to the northeast of the WMU. Fault investigations have not been performed or required due to intent to remove wastes from the site.

17. The rocks to the northeast of the Franklin fault are composed of the cretaceous Chico Formation which consists primarily of claystones, siltstones, and sandstones. The rocks to the southwest of the fault are composed of shales and mudstones of the Miocene-age Monterey formation in stratigraphic contact with massive siltstone and claystone which include a few thin sandstone beds.

Soils

18. Based on information collected during the ROWD site investigation, the C&H WMU is underlain by a thin blanket of soil and weathered rock of approximately three to ten feet in thickness on top of low permeability fractured bedrock. Soils are typically

classified as silt, ranging from a dark yellowish orange silt, with light gray motling and no plasticity, to a stiff dusky-yellow, clayey silt of low plasticity. One of the borings drilled in the canyon fill encountered silty sandy gravel between 14 feet and the boring terminus at 30 feet. The gravel materials consisted of siltstone fragments, with varying degrees of weathering, in a silty matrix, possibly indicating colluvial (landslide) deposition. In the modified-area fill portion of the WMU, two borings completed to approximately 20 feet below ground surface encountered siltstone immediately below the sludge fill at a depth of 15 feet. Fine fractures in the bedrock appeared to be filled with the sludge.

HYDROGEOLOGIC SETTING

19. The site is located in an area of regional groundwater recharge in a topographically upgradient area. The regional groundwater discharge area for groundwater flowing under the site is the Carquinez Strait. Infiltration of precipitation, which recharges the flow system, occurs through a thin veneer of silty surficial soil and along fractures and joints within bedrock of the Monterey Group.

20. Depth to groundwater (vadose zone thickness) below the modified-area fill portion of the WMU, in the topographically highest areas of the site, ranges from approximately 68 feet to the northeast to approximately 100 feet to the southwest. Depth to groundwater ranges from approximately 15 feet to 90 feet below ground surface in the canyon fill area of the WMU.

Groundwater

21. There is one well that could possibly be located within one mile of the WMU perimeter. DWR records show one domestic well whose distance from the WMU could range from 0.96 miles to 2.3 miles. Department of Water Resources (DWR) records report one cathodic protection well existing approximately 1.6-1.8 miles from the WMU.

22. Groundwater impacts from the WMU have not been fully characterized, in part due to natural variances in groundwater quality and variances in the structure and lithology of geologic units along the hydraulic gradient at the site. No demonstrated or anticipated major impacts have been identified.

Surface Water

23. The only surface water features identified in the immediate vicinity of the C&H WMU are seasonal seeps and a stream along Cañada del Cierbo and a small intermittent pond

Section 15321, Title 14 of the California Code of Regulations.

COMMENTS

33. The Board has notified the discharger and interested agencies and persons of its intent to prescribe site cleanup requirements for the closure, and has provided them with an opportunity to submit their written views and comments.

34. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED pursuant to authority in Section 13304 of the California Water Code, the discharger, its agents, successors and assigns may excavate and remove waste at C&H Sugar WMU in preparation for final closure, providing compliance is maintained with regulations adopted under Division 7 of the California Water Code and with the following:

A. PROHIBITIONS

1. The WMU is considered a closed facility. No additional wastes of any origin shall be allowed to be deposited or stored within or upon this site.

2. The discharger, or any future owner or operator of this site, shall not cause the following conditions to exist in waters of the State at any place outside the waste management facility:

   a. Groundwater

      Groundwater quality shall not be degraded as a result of the past waste disposal operation.

   b. Surface Waters

      Floating, suspended, or deposited macroscopic particulate matter or foam.

      Bottom deposits or aquatic growth.

      Adversely alter temperature, turbidity, or apparent color beyond natural background levels.

      Visible, floating, suspended or deposited oil or other products of petroleum origin.

closure activities will conform to the most recently approved closure plan and that the plan provides for site closure in compliance with all applicable regulations.

C. PROVISIONS

1. The discharger shall comply with all Prohibitions, Specifications, and Provisions of this Order, immediately upon adoption of this Order or as provided below.

2. The discharger shall submit a **Facility Closure Plan** that proposes a workplan and schedule for closure of the entire WMU. This report shall include plans for grading and reinforcing the slope of the canyon fill portion and controlling erosion and storm water runoff for the entire WMU.

   REPORT DUE DATE: December 13, 1995

3. The discharger shall submit a **Closure Certification Report,** acceptable to the Executive Officer, for the entire WMU documenting completion of closure in accordance with the **Facility Closure Plan** and demonstrating that any waste left in place will not degrade the water quality of the underlying aquifer or the stream in Cañada del Cierbo.

   REPORT DUE DATE: December 31, 1998

4. The discharger shall prepare, implement and submit a **Storm Water Pollution Prevention Plan** in accordance with requirements specified in the State Water Resources Control Board General Permit for Storm Water Discharges Associated with Construction Activities (NPDES Permit No. CAS000002).

   REPORT DUE DATE: October 1, 1995

5. The discharger shall prepare and submit an **Annual Report** which shall include a summary of visual observations obtained during site inspections and sampling results from the previous two storm water monitoring events.

   REPORT DUE DATE: Each July 1 until closure of the WMU has been certified

6. The discharger shall remove and relocate any wastes which are discharged after the date of adoption of this Order in violation of these requirements.

7. The discharger shall maintain a copy of this Order at the site so as to be available at all times to site operating personnel.

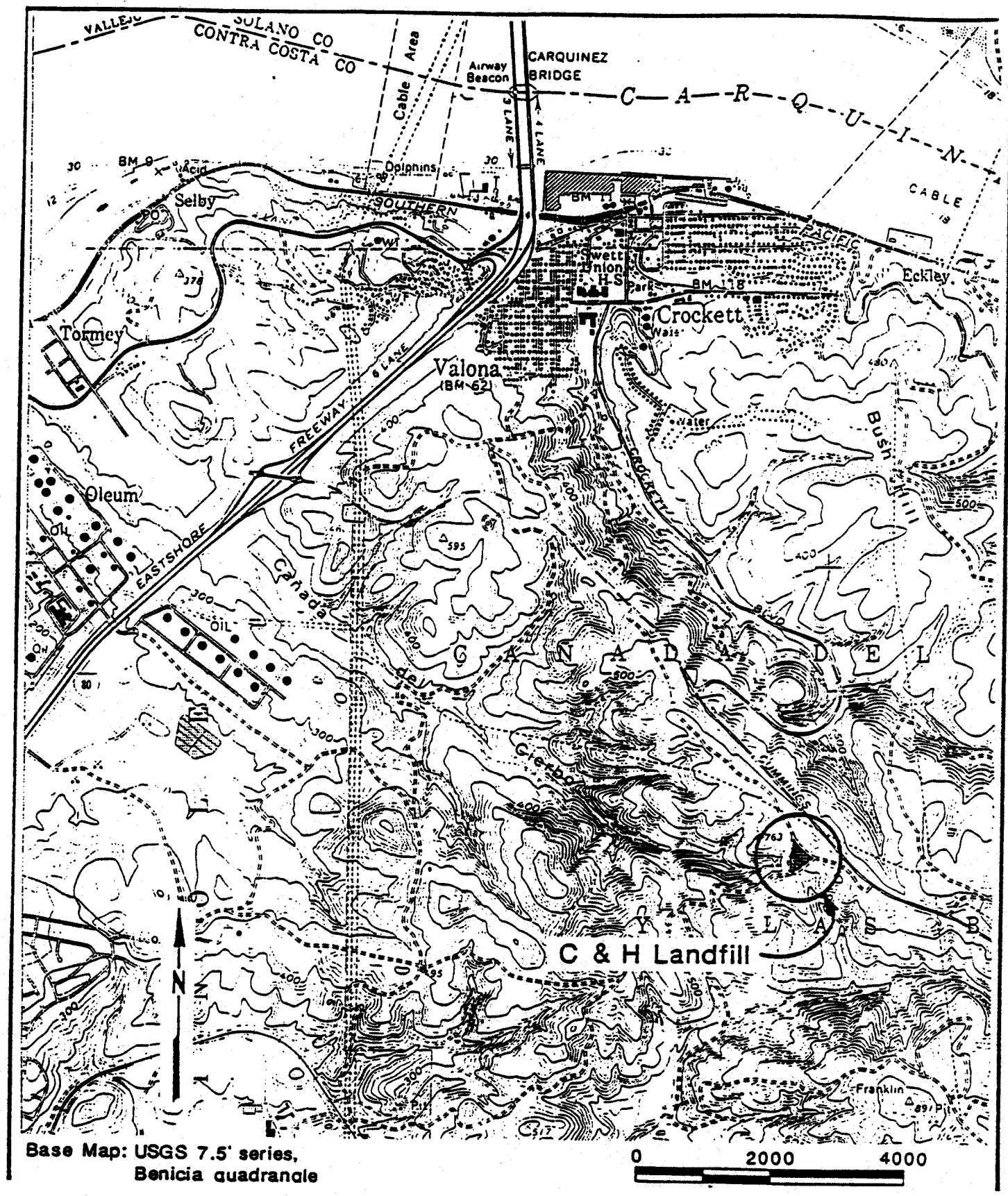
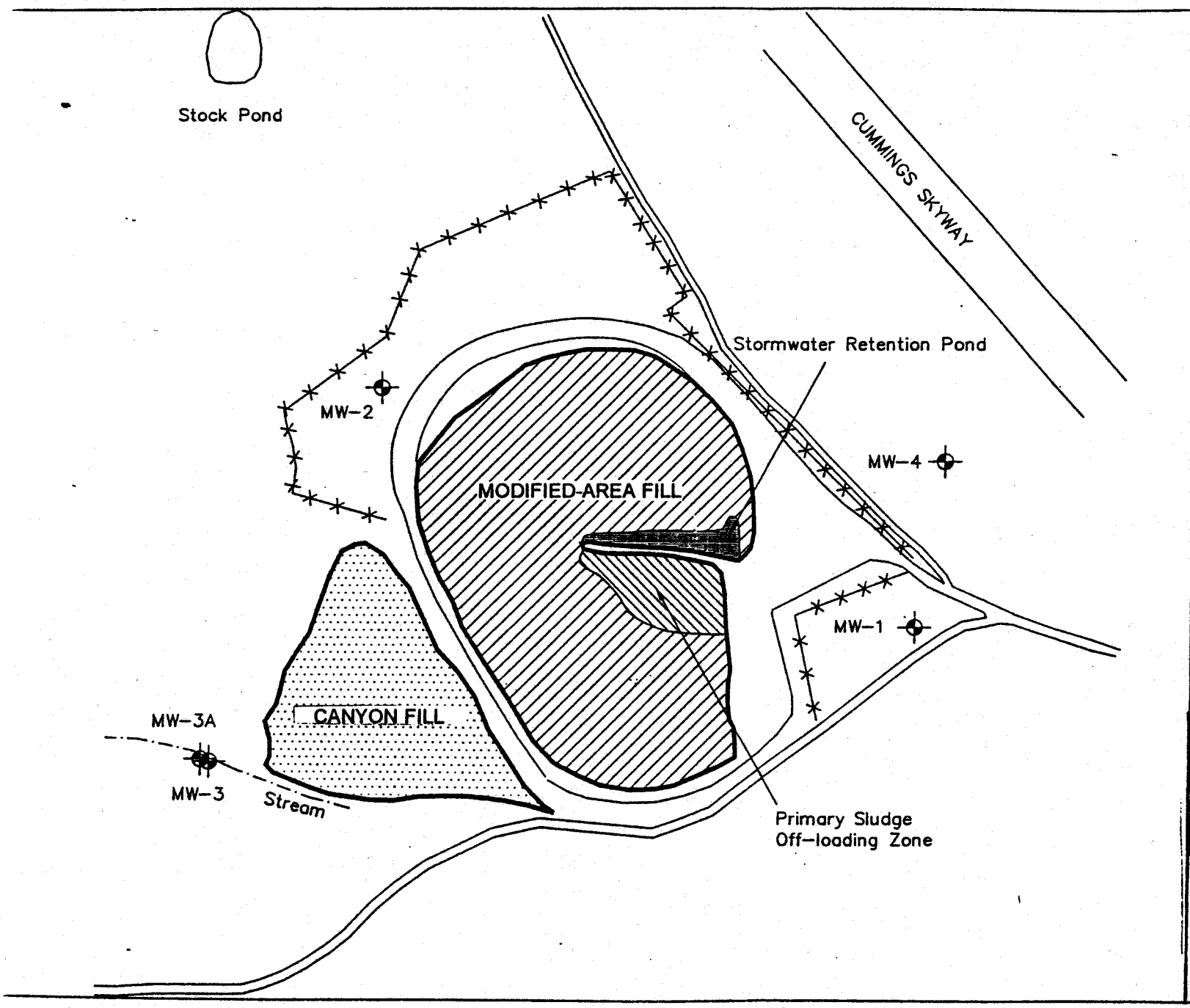


Figure 1. Site Location Map - C&H Sugar Waste Management Unit, Contra Costa County



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0 125 250

(Approximate Scale in Feet)

LEGEND

- Monitoring Well
- Fence
- Active Landfill
- Inactive Landfill
- Primary Sludge Off-loading Zone
- Stormwater Retention Pond
- Stream

Notes:

1. All locations are approximate.

Figure 2
Facility Map
C&H Sugar WMU
Contra Costa County